

enable the societies to come to a right decision. As it is, the Conference decided to invite the societies—first, to confirm by their separate vote the joint resolve of their delegates, and then to give proof of their interest in the attainment of the object by nominating one or more members to act on a committee to be appointed for the purpose. The evil of such a course is, that much valuable time is lost in correspondence and negotiation before any practical step is taken in the matter. After all, however, the delay may be useful in ripening opinion on the subject. What is wanted in the steps eventually to be taken is energy of purpose and promptitude of action, for we are sure that the object in view will be eminently conducive to the welfare and progress of Science in the United Kingdom.

FOSSIL OYSTERS

Monographie du Genre Ostrea—Terrain Cretacé. Par Henri Coquand, Docteur ès-Sciences, Professeur de Géologie et Mineralogie. (Paris: Baillière, 1869.)

OF the many able geologists whom France has produced, few have had better opportunities of observation, or have availed themselves of them to better purpose, than the author of this monograph. Distinguished alike by his skill and long experience as a palæontologist, and by his extensive knowledge of practical geology, M. Coquand has laboured long and well, and far and wide—not only in Provence, and Italy, and Germany, but in far distant regions in Spain and Africa, in valleys and mountains never before resounding to the blows of the geologist's hammer.

Those who are only acquainted with the chalk as it is seen exposed in quarries and cuttings on the green downs and wolds of England, can form but a very imperfect notion of its true character. As M. Coquand has shown in a paper lately read before the Geological Society of London,* the chalk of England, extensive as we are accustomed to regard it, is but a fragment when compared with that which is seen in the South of France. The utmost thickness of the English Cretaceous beds is found to be about 900 feet, while in Provence the same, or rather the equivalent beds are more than 4,000 feet thick. In England we are accustomed to arrange the chalk into three or four divisions, while in France their more extended development requires an entirely different arrangement, and thus we find no less than eleven different beds, the character and limits of which are now ascertained with great accuracy.

The French strata being thus so much more largely developed than the English, the character of the fauna is, as might be expected, infinitely more varied. The difference of nearly three thousand feet is principally represented in France by several marine and freshwater beds altogether unknown in England. In some places, as at La Cadière and Martigues, we find extensive beds of Hippurites and Radiolites—fossils almost unknown in England, lying ranged in close order as when they lived; and again, while we have been accustomed to regard the chalk as altogether of marine origin, we find in Provence a district of about 250 square miles, in which the upper chalk strata of England and the Charentes of France are represented by freshwater deposits 1,400 feet thick. These contain several hundred species of land and fresh-

water shells unknown elsewhere, associated with beds of lignite as compact as our own Newcastle coal, and like it worked extensively for fuel. Both from the palæontological and the geological evidence it would seem as if, at some time, while our Cretaceous deposits were interrupted and stationary, others of great magnitude, with a succession of faunæ essentially differing, as well from our own as from each other, were accumulating in the South of France, alternately depressed and elevated—sometimes a deep sea, sometimes a great lake, and not improbably at one time dry land.

After a careful study of the Cretaceous systems of many countries, M. Coquand, undeterred by the dread of taking charge of a family at once so numerous and so troublesome, has now been induced to prepare this monograph of all the Cretaceous oysters wherever found, to be followed by like monographs of the Tertiary, Jurassic, Triassic, and Permian formations. It is, we believe, the first, or at least the most important attempt to give a synopsis of any one genus occupying so extensive a range.

The results of M. Coquand's researches are sufficiently striking; he describes no less than 255 distinct species of chalk oysters (including *Gryphæa* and *Exogyra*), and of these he has given excellent figures in an atlas of 75 plates, in folio. As regards England, he has disclosed the poverty of the land as compared with our neighbours. Our chalk oyster beds have been examined as assiduously as the French, but they have been found much less prolific. While France possesses 115 well-marked species, England, according to Mr. Morris's catalogue, can show but 25, all of which, except one (*O. triangularis* of Woodward), seem to be found also in France.

Nor is the range of some species less remarkable than their abundance. Two of them (*vesiculosa*, and *ungulata* or *larva*) appear to be altogether cosmopolitan; the former being found alike in England, France, Algeria, Belgium, Spain, Poland, Russia, Sweden, North America, and Mexico; and the latter having been also traced through all these countries (except Poland and Mexico), and extending its range also to India.

But while some species are thus prone to wander, others are to be noted for their domestic habits. Out of 49 American species, five only have been met with in Europe; and of 27 in Russia, and 23 in Spain, no less than 10 in each of these countries are not found elsewhere.

It seems evident from our author's observations, that so far as these fossils are concerned the several zones of chalk which he has described are divided by "a hard and fast line," marking the limits of each as clearly as the Tertiaries are separable from the Secondary rocks. Of the several *Dordoniens* species, not one is found in the *Campanien* beds, and of ninety-five found in the *Campanien* none are found in the lower beds, and the same observation applies to each of the seven or eight inferior deposits. Although it transcends all our powers of calculation to form even a conjecture, much less an approximate estimate of the ages of ages that should be allowed for the *creation* (or, if that word be not allowable, for the introduction or evolution) of these various forms, and the extinction of their predecessors, we may yet gather from these materials a somewhat better, although still utterly inadequate notion of the extreme deliberation, so to speak, exhibited in building up this portion of the earth's fabric.

* Quarterly Journal G. S., Aug. 1869, vol. 25, part 3.

M. Coquand's memoir can hardly fail to be welcomed as a valuable addition to our palæontological and geological literature, both for what it is, and for what it suggests. Monographs of the fossils of any one country can only be regarded as so many *Mémoires pour servir*—words and lines, rather than pages—of the geological record. Incomplete as that vast history must ever remain, it would be found far more available than it is if we could have a synopsis like the present of every important genus. Owing to their wide range, and the usually good state of preservation in which they are found, the study of these fossils cannot fail to be of value with reference to some questions of much present interest. As compared with the fauna of the Cretaceous seas, the fossil mammals of the Quaternary period, to which reference is so often made in these discussions, afford but very imperfect materials for testing the various theories which are from time to time put forward as to the succession of species. These Quaternary beds usually exhibit but broken fragments—*dissecta membra*, which, while lying on the surface, or tossed about in company with river or deluge gravels, have been subjected to so many chances and changes that the order of succession is often difficult, if not impossible, to ascertain; while, on the other hand, the fossils of the chalk, slowly accumulating during countless ages in the quiet depths of their seas, exhibit the exact order in which their multitudinous genera and species successively made their appearance and, having endured for their appointed seasons, finally disappeared.

If we could have monographs of other important families arranged upon a plan as comprehensive as M. Coquand's, how much less unsatisfactory might our speculations be upon the perplexed and perplexing questions of the origin, distribution, and extinction of species. When we consider the subjects of this memoir, their great variety and wide dispersion, although we might perhaps think it possible that, as we have heard, an oyster should be "crossed in love," we find it difficult to imagine the creature as existing under such conditions that one species, while engaged in "the struggle for existence," should starve out and extinguish another; or that any process of "natural selection" should avail to alter the formation of the hinge as well as the internal and external structure of the shell. Indeed, if any such change did occur, it must have been *per saltum*, since with these mollusks, numerous as they are, there are no forms that can fairly be recognised as transitional; for just as each zone or region of the chalk is marked by the presence of its peculiar fauna, so each species of this numerous family has a character of its own; it is *sui generis*, apparently without ancestors and without descendants. If, indeed, all the members of this great family, by virtue of some law or process of evolution, did descend from one common ancestor, we should expect to find their forms varied and numerous, instead of being, as to our sorrow we find them, more simple and far less numerous; so that instead of being permitted to choose from the two hundred and fifty-five kinds described by M. Coquand, we are reduced to the pitiful allowance of one poor "*native*," and from what we see and hear of *him* it seems not unlikely that he is to be the last of his race, and that ere long, Oysters, like Mastodons, will be things of the past.

J. W. FLOWER

OUR BOOK SHELF

Mrs. Loudon's First Book of Botany, for Schools and Young Persons. New edition, revised and enlarged. By David Wooster. (London: Bell and Daldy, 1870.)

WE wish we could speak more favourably of this prettily got-up little book. Mrs. Loudon's writings did good service in cultivating a love of plants among the last generation; but when a new edition of an old manual is brought out, with the date of the current year on the title-page, and an editor's name as having "revised" it, we expect that it will be corrected by the light of the present state of scientific knowledge. In the present instance this has not been adequately done; of the inadequacy we may give but two instances. At p. 18 prickles are described as metamorphosed leaves, instead of, as they really are, indurated hairs, or processes of the epidermis. But a more serious erroneous description occurs in the case of the spores of ferns, which are said to differ from seeds "in not requiring to be fertilised by pollen" (do seeds require to be fertilised by pollen?) The reader is left to suppose that the young fern-plant springs direct from the spore, no reference whatever being made to the recent discoveries of the functions of the *pro-thallium*, *archegonia*, and *antheridia*. The arrangement is good, as also are some of the illustrations; but the book cannot be used as a manual by teachers or lecturers, without the errors being corrected from some other handbook.

A. W. B.

The Birds of Asia. By John Gould, F.R.S.

THE twenty-second part of this magnificent work has just been issued to the subscribers. It contains fifteen plates coloured by hand, including the great alced, four owls, two pheasants, three buntings, three piculets, Franklin's barbet, and the long-billed wren, accompanied by letter-press descriptions. Among so much that is beautiful and interesting, it is very difficult to particularise; but we cannot help referring to the charming little owl dedicated to the late Sir Benjamin Brodie, the eminent surgeon, and named *Athene Brodiei*. Among the peculiarities of the bay owl found in Nepaul and the northern confines of India, Mr. Gould notices its friendship for wild animals, living on good terms with the tiger, and sometimes alighting on its back. We learn that one of the pheasants, the Chinese *Crossoptilon*, or Dallas's eared pheasant, is now domesticated in our Zoological Gardens; also that some eggs have been hatched there, and that female birds may be purchased for 15*l.* The long-billed wren (*Rimator malacoptilus*, Blyth), a small reddish-brown bird, with a droll apology for a tail, is said to be excessively rare, and one of the most curious and highly-interesting species in the Indian avi-fauna.

Zoologie et Palæontologie générales. Par Paul Gervais, Prof. d'Anatomie Comparée au Museum d'Histoire naturelle de Paris. Première Série. 4to. Planches 50. (Paris: Bertrand, 1867—69.)

THIS handsome volume, with its carefully executed plates, is, as the author states, an endeavour to make the treasures accumulated in the Museum of Natural History available for the advance of science. The present part is occupied with the consideration of various living and fossil vertebrated animals, and is introduced by a long account of the arguments, most of them familiar to our readers, respecting the duration of man's habitation of the earth, together with minute descriptions of bones of the animals found in various caverns in France. The second chapter treats of the Fossils of Armissan (Aude); the third of animals living at the present time in the French possessions in the North of Africa; the fourth of some fossil reptiles of the secondary period, especially including the archæopteryx; the fifth and last considers the different species of fossil reptiles.